

# APPARATUS AND METHOD FOR DETECTING AND MITIGATING A STOVETOP FIRE

## CLAIMS

1. An apparatus for detecting a hazardous fire condition, comprising:
  - a) a stove top having one or more heating elements;
  - b) an array of sensors for sensing at least two physical parameters of the stove top;
  - c) a processor having inputs connected to the sensor array, and an output to indicate the presence of a hazardous fire condition, the processor comprising a neural network that distinguishes a predetermined hazardous fire condition from a non-hazardous fire condition based upon the inputs and produces an output to indicate whether the condition is hazardous or non-hazardous.
2. The apparatus of claim 1 wherein the sensor array comprises at least one temperature sensor and at least one optical sensor.
3. The apparatus of claim 2 wherein the optical sensor comprises an ultraviolet light sensor.
4. The apparatus of claim 2 wherein the optical sensor comprises an infrared sensor.

5. The apparatus of claim 1 wherein the sensor array comprises at least one of an ultraviolet or infrared sensor and a combustion byproduct sensor.
6. The apparatus of claim 5 wherein the combustion byproduct sensor comprises a carbon monoxide sensor.
7. The apparatus of claim 5 wherein the combustion byproduct sensor comprises a hydrocarbon sensor.
8. The apparatus of claim 1 wherein:
  - a) the output is provided to a control unit;
  - b) the control unit turns off the stove heating elements in response to a hazardous condition output.
9. The apparatus of claim 8 wherein the output is provided to the control unit by a wireless channel.
10. The apparatus of claim 1 wherein the sensor unit is located above the stove top, beneath a microwave oven.
11. A method of detecting hazardous fire conditions on a stove top, comprising the steps of:

- a) monitoring at least two physical parameters of the stove top;
  - b) providing a neural network having the monitored parameters as inputs;
  - c) training the neural network to recognize a hazardous fire condition by providing plural fire conditions and identifying to the neural network whether the fire conditions are hazardous or non-hazardous.
- 12. The method of claim 11 wherein the step of monitoring at least two physical parameters further comprises the step of monitoring temperature and at least one of ultraviolet or infrared light radiation.
- 13. The method of claim 11 wherein the step of monitoring at least two physical parameters further comprises the step of monitoring at least one of ultraviolet or infrared light radiation and combustion byproducts.
- 14. A method of detecting hazardous fire conditions on a stove top, comprising the steps of:
  - a) monitoring at least two physical parameters of the stove top;
  - b) processing the monitored parameters with a neural network, the neural network having been trained to distinguish a hazardous fire condition from a non-hazardous condition;

c) turning off the heat produced by the stove top in the event that a hazardous fire condition is detected.